R E P O R T R E S U M E S

ED 003 220 56

USING SIMULATION TECHNIQUES TO CHANGE ATTITUDES OF EDUCATION MAJORS TOWARD PROFESSIONAL COURSE OBJECTIVES.

BY- BOND, JACK H.
OREGON STATE SYSTEM OF HIGHER EDUCATION, MONMOUTH

REPORT NUMBER NDEA-VIIA-1247 PUB DATE 30 JUL 65
REPORT NUMBER R-40
GRANT OEG-7-47-0000-239
EDRS PRICE MF-$0.09 HC-$1.72 43P.

DESCRIPTORS- *COLLEGE STUDENTS, TEACHERS COLLEGES, TEACHER EDUCATION, *EDUCATION MAJORS, *EDUCATIONAL PSYCHOLOGY, *SIMULATION, *STUDENT ATTITUDES, *CHANGING ATTITUDES, *PROFESSIONAL EDUCATION, MONMOUTH, OREGON

THE PURPOSE WAS TO DETERMINE THE EFFECTS OF CLASSROOM SIMULATION ON THE ATTITUDES OF EDUCATION MAJORS TOWARD TOPICS IN EDUCATIONAL PSYCHOLOGY. EXPERIMENT 1 SOUGHT TO DETERMINE THE MAGNITUDE OF ATTITUDE CHANGE AS A RESULT OF SIMULATED EXPERIENCES. EXPERIMENT 2 REPEATED THE FIRST EXPERIMENT USING A REFINEMENT OF THE ATTITUDE INSTRUMENTATION AND TESTED THE RESULTS OF ATTITUDE CHANGE ON STUDENTS SCORING LOW ON A PRETEST OF ATTITUDE. THE EXPERIMENTAL GROUP CONSISTED OF 20 STUDENTS. THE CONTROL GROUP CONSISTED OF 15 STUDENTS. SUBJECTS IN THE EXPERIMENTAL GROUP WERE TRAINED 1 HOUR A DAY PER WEEK FOR 5 WEEKS. A VARIETY OF PROBLEM SEQUENCES WERE EMPLOYED TO TEACH A SPECIFIC PRINCIPLE OR SKILL. EACH SEQUENCE WAS USED REPEATEDLY UNTIL THE TESTEE ACHIEVED THE ESTABLISHED LEVEL OF PERFORMANCE. AFTER EACH PRESENTATION OF THE PROBLEM AND FEEDBACK SEQUENCE, THE EXPERIMENTER AND THE TESTEE DISCUSSED THE EXPERIENCE IN PREPARATION FOR THE NEXT EXPERIENCE. THE TESTEE WAS FORCED TO RELY HEAVILY ON THE FEEDBACK SEQUENCES AND THE SUPPORTING REWARDS. THE SEMANTIC DIFFERENTIAL SCALES WERE ADMINISTERED TO ALL ENROLLED. ONE WEEK LATER, AFTER ALL EXPERIMENTAL SUBJECTS HAD SPENT AN HOUR IN THE CLASSROOM SIMULATOR, THE FIRST POST-TEST WAS ADMINISTERED. FOUR WEEKS LATER THE FINAL POST-TEST WAS ADMINISTERED AFTER THE PROBLEM EPISODES HAD BEEN COMPLETED. SCORING WAS ACCOMPLISHED BY RATING EACH BIPOLAR ADJECTIVE SCALE AS ZERO FOR THE MOST POSITIVE MARK AND SIX FOR THE MOST NEGATIVE. POSITIVE ATTITUDES WERE INDICATED BY THE TOTAL SCORES APPROACHING ZERO. THERE WERE NO SIGNIFICANT DIFFERENCES BETWEEN THE TREATMENT GROUPS. FINDINGS WERE NOT SUFFICIENTLY CONCLUSIVE, BUT EXPERIMENT 1 SHOWED A TREND TOWARD POSITIVE CHANGE WHEN USING SIMULATED EXPERIENCES. (HB)

ED003220

1247

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Office of Education
This document has been reproduced exactly as received from the person or organization originating it. Points of view or opinions stated do not necessarily represent official Office of Education position or policy.

USING SIMULATION TECHNIQUES TO CHANGE ATTITUDES OF EDUCATION MAJORS TOWARD PROFESSIONAL COURSE OBJECTIVES

Jack H. Bond

Final Report

Title VII Project Number 1247

National Defense Education Act of 1958

Grant Number OE-7-47-0000-239

OREGON STATE SYSTEM OF HIGHER EDUCATION

R-40

Using Simulation Techniques to Change Attitudes of Education Majors Toward Professional Course Objectives

Jack H. Bond

Final Report
Title VII Project Number 1247
National Defense Education Act of 1958
Grant Number OE-7-47-0000-239

July 30, 1965

Teaching Research Division
Oregon State System of Higher Education
Monmouth, Oregon

The Research Reported Herein was
Supported by a Grant from the
U. S. Department of Health, Education & Welfare
Office of Education

Acknowledgments

This study required the interest and cooperation of many individuals. The writer wishes to express special appreciation to the following people:

Dr. Bert Kersh, for his encouragement and assistance in designing the study around his research Project 1183, without which the study would not have been possible.

Drs. James Beaird, Dale Hamreus and Paul Twelker, Teaching Research Division, OSSHE, for their consultation and advice on instrumentation and analysis of data.

Drs. Margaret Hiatt, Ralph Farrow, Edwin R. Lyle, and Mr. Frank Miles for serving as consultants for Educational Psychology content and scales.

Drs. Jesse Garrison and Authur Glogau for unlimited cooperation by including the study in their Educational Psychology courses and encouraging the students to serve as subjects.

Mr. Ben Purvis, for technical assistance in data processing and computer programing for analyzing the data.

TABLE OF CONTENTS

List of Tables iii

Experiment I 1

- Hypotheses 4
- Procedures 4
  - Selection of Subjects
  - Simulation Training
  - Semantic Differential Attitude Scale
  - Data Collection and Analysis
- Results 8
- Discussion 9

Experiment II 13

- Procedures
  - Development of Second Attitude Scale
  - Selection of Subjects
  - Data Collection
- Results 15
- Discussion 15

Summary and Implications 17

References 19

Appendices

- A - Summary of Raw Data 20
- B - Sample Pages of Semantic Differential Attitude Scale 29
- C - Sample Pages of Attitude Towards Educational Psychology Scale 33

LIST OF TABLES

Table		Page
1	Summary of Means and Standard Deviations for Pretest, First Post-test, and Second Post-test for Evaluative Scales.	9
2.	Comparison of Mean Gain Scores for Each Topic	11
3	Summary of Means and Mean Gain Scores for Pretest and Post-test of Both the SDAS and ATEP.	16
Appendix A		
1	Experiment 1, Mean Evaluative Scale Scores and Mean Total Scores and Standard Deviations for Experimental Group	21
2	Experiment 1, Mean Evaluative Scale Scores and Mean Total Scores and Standard Deviations for Control Group	23
3	Experiment II, Mean Evaluative Scale Scores and Mean Total Scores and Standard Deviations for Experimental Group	25
4	Experiment II, Mean Evaluative Scale Scores and Mean Total Scores and Standard Deviations for Control Group.	27

Chapter 1

Experiment I

The apathy seemingly expressed by college students toward education courses is necessarily of concern to professors in schools of education. Students often describe education courses as being dry, repetitious, and lacking relevance to teaching. This somewhat negative attitude held by students may stem from the lack of concise division of content material between courses in education, the relatively universal content of education courses, or from the lack of concrete experiences for the learner which are related to the course content. For purposes of the present study, the latter is presumed to be the primary reason.

The content of an education course is usually based on the knowledge of the instructor as acquired through his experiences. The course content typically is arranged by the instructor so as to get the learner to the desired level of behavior by the shortest route. Very often the instructor beings by (1) defining terms and classification schema, then (2) organizing a logic (or theory), and finally (3) relating examples from practice to 1 and 2. However, the student often is not able to "see" the relationship of basic concepts as important to eventual teaching practice before he has had experiences of his own.

Unless the instructor and student have shared a set of classroom experiences, the instructor may fail to communicate to the student. The poor communication may be exhibited by the student as frustration and anxiety towards the instructor and the subject matter. The apathetic behavior of students in education courses may reflect the attitude of the students toward the course resulting from their frustration and anxiety. Reasonably the students' negative attitudes might change if instructor-

student communications were improved by provision of classroom experience to which both could refer.

Swank (1962) compared an instructional sequence taught by lecture and by group participation and concluded that "...mass efforts to reduce prejudices whether they be directed at national groups or groups within a company may educate individuals to mouth the correct responses but may have little or no effect on individual practices." The effects of mass communication, as shown by studies involving the "Battle of Britian" film, indicated an increase in the conceptual aspects of attitude—those based on facts—but not in the emotional aspects (Hovland, Lumsdaine and Sheffield, 1949).

The mere cognition of facts and relationships does not seem to bring about the impact necessary to cause a change in the learner's behavior or his attitude. The problem of the instructor is to get and to keep the student involved.

Rogers (1957) theorizes that "...the best teaching emerges from a teacher-learner relationship in which the former is accepting and permissive and the learner makes the relevant discoveries himself. The learner must be immersed in appropriate experiences and from these becomes aware of their significant meanings." If this is true, the present sequence characteristic of teacher training (first telling in the academic courses and then practicing or experiencing in student teaching) may be a "cart before the horse" approach. Education schools do report students seem to see more relevance to academic course content objectives <u>after</u> an experience in the classroom.

In a monograph on how to study personality, Morris (1958) concluded "...A course in human personality for intending teachers should express its aims in educational terms (experience and practice) rather than psychological terms (theoretical)... (it) should be based upon the student's experiences

with children, teachers and themselves." The importance of basing the study upon experience rather than theory and classification is the important implication. After the experience, theory and classification would be based on examples from the learner's own experience.

Kersh (1963) adds support to the above implication by suggesting that students should experience the impact of a classroom and then train under a less stressful environment. The nature of the initial experience was a simulated classroom where beginning student teachers were confronted with specific problem situations to which they were asked to respond in a realistic manner. Because the simulation experience differs from the conventional cognitive academic experience in requiring active perception of cues by the learner in place of listening to verbal descriptions, it may provide the impact necessary to bring about a change in attitude.

Comments from subjects of Kersh's experimental studies indicate they look upon their academic courses as more meaningful as a result of the practical experience gained through simulation. The simulated experience is not the practical experience of a real classroom but does contain the perceptive cues of the real situation and requires a response on the part of the learner. The fact that the subjects are required to obtain cues from the situations, to organize a response, to enact their responses and see the resulting reaction of the class to this response is sufficient for them to gain insights into the academic course content and therefore gain meaning. Many subjects reported a desire to have simulated experiences earlier in their college career. They maintained that this would have made the content of courses more meaningful.

To provide the real classroom experience necessary to develop a basis for relating it to academic course material would require an impossible amount of time and energy and would be difficult to fit into the organization

of a school setting. The effect of such a real experience on the student, who may be unprepared emotionally to withstanding the trauma of a real class, would prevent the accomplishment of the original objective. Simulation, therefore, seems to be a method by which a practical experience can be provided without the intervening trauma of the real situation, and which at the same time allows selection of situations that would be most benefical to provide the experiences necessary for greatest reinforcement and transfer in academic courses. The time lapse between real situations can be eliminated, giving an opportunity for more experiences in a shorter time. The order in which the experiences should be given can also be controlled in the simulated setting. The question therefore becomes: Does simulation provide an effective means of giving experience to college students with the impact necessary to change their attitudes toward the content of educational courses?

Hypotheses

1. The experiences provided through individualized instruction in the simulation facility (as described by Kersh, 1963), will produce changes in attitude in a positive direction toward the subject matter of educational psychology.

2. The changes in attitude will become evident after the learner has had experience with a program of 20 problem sequences, (one hour).

Procedures

The study was conducted during the 1964-1965 school year on the campus of Oregon College of Education. Several studies in simulation training were in progress using the students in Junior Block I as subjects. Junior Block I is a combination of the content of educational psychology-learning and evaluation, and reading methods in a daily three-hour time block. The

experimental group in this study received simulation training in connection with one of the forementioned studies.

Selection of Subjects

Forty Block I students were ranked by CEEB scores (College Entrance Examing Board). The experimental group consisted of 20 students, 11 of which were selected for another study and nine of which were assigned randomly. The control group was made up of ten students with CEEB scores matched within 15 points to the 11 participants in the experimental group, and ten who were assigned randomly. Further selection of the basis of attitude as expressed on the pretest was anticipated but was not possible because all students were grouped within a narrow range at the "positive" end of the scale.

Simulation Training

The classroom simulator is a unique audio-visual experience (see Kersh, 1963 for a complete description) consisting of 60 problem sequences which have been divided into three sets of 20 problems each. Each set of problems is designed in such a way that it recreates significant portions of a single school day for "Mr. Land's Sixth Grade." Each problem sequence has associated with it two or three "feedback" sequences. The purpose of the feedback is to communicate to the student teacher (T) the most likely consequence of his behavior.

In the classroom simulator a variety of problem sequences are employed to teach a specific principle or skill. Each sequence is used repeatedly until T has achieved the established level of performance. Typically, T is presented with a problem sequence, enacts a response, and is given feedback. After each presentation of the problem and feedback sequence, the experimenter, (E) and T discuss the experience in preparation for the next experience. Generally, E withholds direct guidance as much as possible, forcing T to rely heavily on the feedback sequences and the supporting records, therefore employing a form of self-evaluation.

Following an orientation to the simulation facility, subjects in the experimental group typically train for one hour one day per week for a period of five weeks. In the present experiment, the not-simulated control group did not receive the above instruction nor any substitute for such instruction.

Semantic Differential Attitude Scale (SDAS)

Kerlinger (1961) reports that factor-type pair comparisons and forced-choice attitude instruments using response and scoring methods that allow independence of response have a great amount of potential in attitude measurement. Endler (1961) feels the test-retest measures of subjects ratings on a semantic differential lend themselves to interpretation regarding changes that may have occurred within the individual over time or as the result of some controlled experience. These implications led to the development of an attitude scale using the semantic differential technique to measure attitude change towards educational psychology. The adjectives (scales) provide the experimenter with a verbal description of the attitude expressed by the subject taking the test. The responses of the subject are readily converted to a numerical score which then can be analyzed using standard statistical procedures.

Three educational psychology instructors assisted in the selection of topics from educational psychology which were representative of the typical undergraduate educational psychology course. Seven topics were identified and became the "objects" toward which subjects would be asked to indicate their attitudes. The topics selected were educational psychology, learning theory, learner attitudes, learner personality, teacher attitudes, emotional growth of learners, and individual differences. In developing the attitude scale, students enrolled in an educational psychology course were asked to write a descriptive paragraph about each of the seven topics. Content analysis of descriptive words used in these paragraphs and utilization of

previous work by Osgood (1958) permitted selection of 25 scales for the preliminary form of the semantic differential employed in the study.

The preliminary form then was administered to another group of 25 educational psychology students during the summer, 1964, and to 40 students in Junior Block I in the Fall, 1964. As a result of these preliminary trials, 15 scales were identified for use of the final form for measuring the attitude towards educational psychology. Seven evaluative scales were selected on the basis of judged appropriateness to the course and having high factor loadings as determined from Osgoods studies. Eight other scales were chosen as distractors and fillers. Ten different forms were prepared for each topic by arranging the scales in differing order on the page. The seven topic pages of each set were randomly rearranged between administrations (Appendix B).

Data Collection and Analysis

The semantic differential scales were administered to all students enrolled in the Junior Block I course on the second day of class during the Winter term, 1965. Approximately one week later, after everyone in the simulated group had spent approximately one hour in the classroom simulator, the first post-test was administered. The final post-test was administered four weeks later when each subject in the simulated group had completed the series of 60 problem episodes (four to six hours of instruction) in the classroom simulator. At no time during the term were the subjects told the reason for the attitude measure or the objective of the study.

Control for communication between subjects who were given simulation training and those who were not was attempted by administering the pretest before informing the subjects of their assignment for simulation and by explaining that everyone would receive a simulation experience by the end of the term. They were informed that the reason for this arrangement was

that only 20 subjects could be scheduled at the beginning of the term and the remainder of the subjects would follow some five weeks later. Subjects were not aware that they were participating in this study except as an adjunct to other projects in simulation training.

By scoring each bipolar adjective scale as 0 for the most positive mark and 6 for the most negative, total scores for the seven evaluative scales theoretically could range from 0-42. Positive attitudes were indicated by the total scores approaching zero.

It became apparent in the analysis of the pretest that scores indicating neutral or negative attitudes toward any of the seven topics were essentially non-existant. The range of total evaluative pretest scores was 0 to 23 with a mean of approximately 9. Approximately two thirds of the subjects scored within the first quartile on the evaluative scales for the topic, "educational psychology." The other six topics yielded a similar profile, thus making the possibilities for an increase in attitude, as measured by the semantic differential, a matter of degree of positiveness rather than a change from negative to positive. Therefore the use of the pretest scores for further selection of subjects on the basis of polarity of attitude was not possible.

In accordance with recommendations by McNemar, (1949, p. 90-94), pretest and post-test gain scores were used in the statistical analysis. In addition the Wilcoxon tests suggested by Osgood (1958, p. 89-100) were employed.

Results

The mean SDAS (Semantic Differential Attitude Scale) pretest score for each treatment group is reported in Table 1. A *t*-test for differences between means indicated that there are no significant differences ($p > .05$) between the treatment groups on the pretest.

Table 1

Summary of Means and Standard Deviations for Pretest, First Post-test, and Second Post-test for Evaluative Scales

	Treatment					
	Experimental			Control		
Topic	Pretest	Post I	Post II	Pretest	Post I	Post II
Educational Psychology	7.1 (3.5)	5.6 (3.5)	5.1 (4.0)	9.1 (4.4)	8.1 (4.0)	7.5 (5.1)
Individual Differences	10.8 (5.7)	7.6 (5.1)	7.0 (4.3)	10.1 (4.4)	8.4 (4.8)	8.2 (4.8)
Learner Attitudes	9.5 (5.2)	9.0 (4.1)	7.1 (4.2)	9.6 (5.7)	10.2 (4.7)	7.8 (5.7)
Learner Personality	10.4 (4.3)	9.2 (4.4)	8.6 (3.3)	9.0 (5.2)	8.9 (4.9)	10.8 (4.8)
Emotional Growth	8.7 (4.1)	7.1 (4.4)	6.7 (3.5)	9.5 (4.3)	9.8 (4.7)	9.3 (7.1)
Learning Theories	8.7 (5.7)	6.6 (3.8)	6.6 (4.1)	10.5 (5.5)	8.9 (4.6)	8.8 (5.6)
Teacher Attitudes	7.2 (5.0)	6.4 (5.9)	5.3 (4.3)	8.2 (5.5)	9.2 (4.6)	7.3 (4.7)

Note: Standard deviation indicated by parenthesis.

A comparison by inspection of the pretest means and the first post-test means in Table 1 indicates that the experimental group changed consistently towards a more positive score for all topics. The control group, on the other hand, changed in the positive direction on only four out of the seven topics.

The mean gain in attitude test scores from pretest to second post-test is shown in Table 2 for each topic. Gain scores for pretest and the first post-test are generally of the same magnitude or less. None of the differences between mean gain scores of the experimental and control group are statistically significant at the .05 probability level, although the gains for the experimental group tend to be larger than for the control group.

Analysis of the data was made using Wilcoxon tests (Alder and Roessler 1964, p. 141). Distance (D) scores were computed for each evaluative scale using pretest and second post-test scores. The matrices were constructed as outlined by Osgood (p. 89-100). The data indicated that all observed D scores are statistically reliable, even the difference between experimental and control groups on the pretest. Consequently the analysis did not permit interpretation of the data in terms of the hypotheses of the study. It is felt by the experimenter that the computation of the D score by Osgood's method may be more sensitive to changes between topics of the SDAS and exaggerate differences between experimental groups or between pretest and post-test scores.

Discussion

Failure to gain differences between treatment group means great enough to be statistically significant by t test is attributed to two factors: (1) the high variance estimates for both treatment groups, and (2) the initially high positive attitude of the subjects in both treatment groups

Table 2

Comparison of Mean Gain Scores
(Second Post-test Minus Pretest) for Each Topic

Topic	Treatment		
	Experimental	Control	t
Educational Psychology	1.47	1.63	.11
Individual Differences	3.74	1.84	1.08
Learner Attitudes	1.21	-1.79	1.73
Learner Personality	2.47	1.79	.49
Emotional Growth	2.00	.21	1.15
Learning Theories	2.00	1.72	.14
Teaching Attitudes	1.84	.94	.50

Note: No differences approached reliability at the $p < .05$ level of significance.

as measured by the pretest. Any significant gain on the post-tests would indicate a change, for example, from "very important" to "very, very important;" a step which is open to a great deal of subjective judgment. That such judgments by individuals were extremely variable is reflected in the relatively high computed estimates of statistical variance for each group.

The highly positive attitudes of the subjects was not anticipated, but perhaps should have been expected. All were elementary education majors in a college specializing in the training of teachers. It could be expected that students selecting the college would reflect an interest in teaching and consequently a more favorable attitude toward the required courses. Part of the failure of the attitude instrument to measure adequately a wide range of attitude could also be attributed to the nature of the student population.

After the data from Experiment I were analyzed, the experimenter decided to further research the semantic differential as a measure of attitude change and to see if another technique of measuring attitude would be more sensitive to minute changes in student attitudes. Selection from a student population at a less specialized institution was not possible because simulation training was offered only at Oregon College of Education during the time of the present research.

Experiment II

The two problems noted in the previous section, (1) the wide variation in attitude test scores, and (2) the initially high positive scores on the semantic differential scales, led to replication of Experiment I using another group of subjects and a different attitude scale. The second experiment was designed to test only the first of the two original hypotheses.

Procedures

Development of Second Attitude Scale

A Thurstone type scale, the Attitude Towards Educational Psychology (ATEP), was developed to use in addition to the Semantic Differential Attitude Scale (SDAS).

A set of 74 statements reflecting various evaluations of educational psychology were constructed using other Thurstone scales as models. Eleven educational psychologists were asked to classify each statement in one of 11 postitions along a continuum reflecting the degree of positiveness or negativeness of attitude towards educational psychology. Consensus was reached on 48 of the statements. These were arranged into two forms (Form AS and Form SB) of 24 statements each (See Appendix C).

The subjects were instructed to select five statements with which they could agree. Each subject's response was converted to a numerical score by assigning a value (1 to 11) to each statement relative to its determined position on the continuum, and calculating the median value of those chosen by the subject.

A revised version of the Semantic Differential Attitude Scale (SDAS) employing ten semantic scales (Appendix B) was used in addition to the ATEP, as pretest and as a post-test.

Selection of Subjects

Subjects were chosen from two of the regular courses in educational psychology (not a part of the Junior Block Program) taught at Oregon College of Education during the Spring term, 1965. A pretest consisting of Form AS of the ATEP and a revised SDAS was administered in the regular lecture class room in the second meeting of the class.

As in Experiment I, the pretest indicated that the student population had highly positive attitudes toward topics in educational psychology. Nevertheless, pretest scores were ranked from highest to lowest and the median score was determined for the two educational psychology classes. Students above the median were considered to have a high or positive attitude and those below the median were termed as having low or negative scores. The subjects selected for Experiment II were those who scored below the median in any five of the seven topics of the SDAS, or in any four of the topics of the SDAS and below the median in the ATEP. A total of 16 of the total of 40 students were judged to meet the above criterion for "negative" attitudes. These 16 subjects were matched on the basis of the number of negative topics on the pretest and then assigned alternatively to the experimental or control group (N = 8 per group).

Data Collection

The experimental group was scheduled for individual experiences in the classroom simulation facility, one hour per week for three weeks. One week following the termination of the simulation experiences for the experimental group a post-test consisting of Form SB of the ATEP and the revised SDAS were administered to all 40 educational psychology students, in the regular lecture classroom. Only the post-tests of the 16 subjects selected for Experiment II were analyzed for purposes of this study.

A population of 52 educational psychology students was available in addition to those serving as subjects in Experiment II. This group was administered Form AS and SB of the ATEP to calculate the coefficient of correlation between forms of the ATEP. Thirty-three of these subjects also completed the revised forms of SDAS so a correlation between the SDAS and ATEP could be determined.

Results

Table 3 summarizes the treatment means and gain scores for both the SDAS and the ATEP. The *t*-tests by topics of the SDAS of differences in mean gain scores for the experimental and control groups was not significant for any topic. The difference in gain scores for the ATEP was also not significant.

The relationship between the ATEP and SDAS is indicated by a coefficient of +.19 for the topic, "educational psychology," and -.08 for "teacher attitude." These coefficients are low and vary on both sides of zero, indicating probably little or no correlation between the two attitude measures. This finding is not consistent with those reported by Osgood (1958, p. 193). Osgood reported a coefficient of +.90 between attitude scores on a Thurstone-type scale and the evaluative dimension of the semantic differential.

Discussion

The introduction of a different type of attitude measure the ATEP, (Thurstone type scale) did not resolve the problems encountered in Experiment I. The suggested low correlation of the ATEP with the SDAS suggests the ATEP may be measuring a different attitudinal dimension, but it still is not sensitive to attitude changes as a result of the simulated experience with the highly selected student population sampled in this study.

Table 3

Summary of Means and Mean Gain Scores
for Pretest and Post-test of Both the SDAS and ATEP

SDAS Topics	Treatments					
	Experimental			Control		
	Pre-test	Post-test	Gain	Pre-test	Post-test	Gain
Educational Psychology	10.00	9.5	.5	15.7	15.3	.4
Individual Differences	13.3	13.3	0	11.7	12.3	-.6
Learner Attitudes	13.3	13.5	0	18.1	16.4	1.6
Learner Personality	13.5	13.5	0	15.3	14.6	.7
Emotional Growth	12.6	9.6	3	13.3	14.3	-1.0
Learning Theories	16.0	18.3	-2.3	18.4	20.6	-2.2
Teacher Attitudes	13.0	13.9	-.9	16.3	14.0	+2.3
ATEP (Attitude Toward Educational Psychology)	3.2	4.3	-1.1	5.6	5.0	0.6

Summary and Implications

The primary objective of the study was to attempt to determine the effects of classroom simulation on the attitudes of education majors toward topics in educational psychology.

The study was conducted in connection with several projects involving simulated classroom experiences as a part of a teacher education program. Experiment I sought to determine the magnitude of attitude change as a result of simulated experiences. It also attempted to determine how soon the change, if any, takes place. Experiment II repeated the first experiment using a refinement of the attitude instrumentation and tested the result of attitude change on students scoring low on a pretest of attitude.

In general, the findings of the project are not sufficiently conclusive to permit any clear-cut recommendations of procedure on the use of simulation to influence the attitudes of education majors towards professional course content. However, evidence in Experiment I shows a trend toward positive change when simulated experiences are included as a part of instruction in educational psychology. Extraneous variables from other concurrent simulation projects are felt to have effected the outcome of the present pilot effort.

The use of the semantic differential as the identifying instrument for attitudes and as the criterion instrument to measure changes in polarity of attitude needs further refinement and interpretation. Osgood (1958) used "topics" which are clearly identifiable e.g., "Eisenhower," and "war." In the present study the "topics" were not so clearly identifiable. They were classifications of verbal knowledge (educational psychology). It could be expected that more variability would be observed in the subjects' marking of the scales because the topics were less definitive. The lack

of conciseness in topics also causes difficulty in determining when changes in attitude take place and the direction of change on later administrations of the instrument.

Although not analyzed in the present study, the informal statements of evaluation made by the subjects at the end of their simulation experience for other simulation studies justifies continued research in this area. Students have frequently reported feeling that simulated training has a definite advantage when included in the academic course work of educational psychology. Further investigation as to when in the student's career the simulated experience should be given; how long the training should be; who should have the experiences; and how the experiences should be integrated into the course content needs to be done.

References

Alder, Henry L. and Roessler, Edward B., Introduction to Probability and Statistics. San Francisco: Freeman, 1964.

Endler, N. S. "Changes in meaning during psychotheraphy as measured by the semantic differential." Journal of Counseling Psychology. 8: 105-111, 1961..

Hovland, Carl, Lumsdaine, Arthur, and Sheffield, Fred D. Experiments in Mass Communication. Princeton: University Press, 1949.

Kerlinger, Fred N. "Factor variance in measurement of attitude toward education." Education and Psychological Measurement, 21: 273-285, 1961.

Kersh, Bert Y. Classroom simulation: A new dimension in teacher education. Title VII Project No. 886, National Defense Education Act of 1958, U. S. Department of Health, Education and Welfare, Office of Education, 1963.

Kersh, Bert Y. Classroom simulation: Further studies on the dimension of realism. Title VII Project No. 1183, National Defense Education Act of 1958, U. S. Department of Health, Education and Welfare, Office of Education (In progress).

McNemar, Quinn. Psychological Statistics, Second Edition. New York: Wiley, 1949.

Morris, Ben. "Personality study: Its aims and implications for students of education." Sociology Review Monograph. Number 1 p. 75-86, 1958.

Osgood, C. E. Suci, G. J. and Tennenbaum, P. H. The Measurement of Meaning. Urbana: University of Illinois Press, 1958.

Rogers, Carl R. "Personal thoughts on teaching and learning." Merrill Palmer Quarterly, 3: 241-243, 1957.

Swank, William A. "Emotion or reason?" Personnel Journal, 41: 18-20, 1962.

Appendix A

Summary of Raw Data

Appendix A Table 1

Experiment 1

Mean Evaluative Scale Scores, and Mean Total Scores and Standard Deviations for the Experimental Group on the Pretest and Second Post-test

(n = 19)

Scale	Pretest Topic						
	Ed Psy	Ind Diff	Lrnr Per	Lrnr Att	Emo Gro	Lrng Theo	Tch Att
Good-Bad	.68	1.42	1.36	1.79	1.05	1.26	.95
Important-Unimportant	.53	.68	.74	.74	.74	.73	.53
Attracting-Repelling	1.53	1.32	1.32	1.74	.95	1.21	1.0
Positive-Negative	.89	1.84	1.42	1.79	1.27	1.21	.95
Reputable-Disreputable	1.36	2.11	1.68	2.0	2.0	1.74	1.53
Interesting-Boring	.84	1.16	1.11	1.21	.74	1.05	.79
Successful-Unsuccessful	1.16	2.22	1.89	2.32	1.95	1.53	1.32
Mean Total Score	7.05	10.78	9.53	10.37	8.74	8.74	7.16
Standard Deviation	3.50	5.65	5.23	4.32	4.06	5.70	4.96

Second Post-test

Scale	Topic						
	Ed Psy	Ind Diff	Lrnr Per	Lrnr Att	Emo Gro	Lrng Theo	Tch Att
Good-Bad	.58	1.11	.95	1.11	1.0	1.0	.74
Important-Unimportant	.21	.21	.32	.37	.42	.33	.32
Attracting-Repelling	1.05	.89	.84	1.53	.84	1.06	.53
Positive-Negative	.84	1.3	.95	1.26	1.11	1.0	.79
Reputable-Disreputable	1.16	1.58	1.63	1.58	1.36	1.5	1.32
Interesting-Boring	.79	.63	.74	.63	.42	.89	.53
Successful-Unsuccessful	.95	1.26	1.63	1.37	1.58	1.28	1.11
Mean Total Score	5.05	7.00	7.05	8.63	6.74	6.74	5.26
Standard Deviation	3.97	4.29	4.18	3.3	3.46	4.07	4.3

Appendix A Table 2

Experiment 1

Mean Evaluative Scale Scores, and Mean Total Scores and Standard Deviations for the Control Group on the Pretest and Second Post-test

(n = 19)

Scale	Pretest Topic						
	Ed Psy	Ind Diff	Lrnr Per	Lrnr Att	Emo Gro	Lrng Theo	Tch Att
Good-Bad	1.16	1.32	1.42	1.79	1.21	1.32	.95
Important-Unimportant	.49	.68	.79	.79	.68	.95	.84
Attracting-Repelling	1.42	1.[illegible]7	1.11	1.63	1.36	1.32	1.24
Positive-Negative	1.42	1.84	1.21	1.42	1.36	1.42	1.24
Reputable-Disreputable	1.63	2.11	2.21	1.89	2.11	1.79	1.24
Interesting-Boring	1.05	.89	1.0	1.42	.84	1.26	1.24
Successful-Unsuccessful	1.47	1.89	1.84	1.84	1.89	1.95	1.42
Mean Total Score	9.11	10.05	9.58	9.00	9.47	10.50	8.22
Standard Deviation	4.37	4.42	5.69	5.21	4.27	5.5	5.51

Second Post-test

Scale	Topic						
	Ed Psy	Ind Diff	Lrnr Per	Lrnr Att	Emo Gro	Lrng Theo	Tch Att
Good-Bad	.89	.95	1.05	1.21	1.0	1.11	.89
Interesting-Boring	.58	.63	.58	.79	.68	.84	.68
Attracting-Repelling	1.37	1.21	1.11	1.53	1.26	1.42	1.32
Positive-Negative	.89	1.89	1.37	1.32	1.26	1.21	1.37
Reputable-Disreputable	1.47	1.42	1.43	1.53	1.47	1.36	1.0
Interesting-boring	1.0	.63	.84	1.0	.95	1.21	1.0
Successful-Unsuccessful	1.26	1.47	1.43	1.53	1.58	1.47	1.37
Mean Total Score	7.47	8.21	7.79	10.79	9.26	8.83	7.28
Standard Deviation	5.07	4.77	5.69	4.79	7.07	5.6	4.71

Appendix A Table 3

Experiment II

Mean Evaluative Scale Scores, and Mean Total Scores and Standard Deviations for the Experimental Group on the Pretest and Second Post-test

N = 8

Scale	Pretest Topic						
	Ed Psy	Ind Diff	Lrnr Per	Lrnr Att	Emo Gro	Lrng Theo	Tch Att
Good-Bad	1.50	1.75	1.75	1.88	1.50	2.63	1.50
Important-Unimportant	1.38	.25	.75	.75	.50	1.25	1.13
Attracting-Repelling	1.88	2.0	2.00	2.00	2.37	2.13	2.25
Positive-Negative	1.88	2.13	2.13	2.37	1.63	2.63	1.88
Reputable-Disreputable	1.88	3.00	2.63	2.87	2.50	2.75	1.88
Interesting-Boring	1.71	.38	1.63	1.38	1.63	2.00	1.88
Successful-Unsuccessful	—	2.13	2.50	2.25	2.37	3.00	2.37
Mean Total Score	10.00	13.3	13.25	13.5	12.6	16.00	13.00
Standard Deviation	3.12	3.75	2.24	2.49	1.93	3.65	5.24

Second Post-test

Scale	Topic						
	Ed Psy	Ind Diff	Lrnr Per	Lrnr Att	Emo Gro	Lrng Theo	Tch Att
Good-Bad	1.38	1.63	2.25	2.37	1.63	2.13	2.13
Important Unimportant	0.88	0.88	0.50	0.25	0.13	1.00	1.25
Attracting-Repelling	2.00	1.88	2.13	2.37	1.50	1.63	2.37
Positive-Negative	1.38	2.37	2.25	2.25	1.88	2.25	2.00
Reputable-Disreputable	2.13	2.13	2.50	2.25	2.37	2.25	2.14
Interesting-Boring	1.63	0.63	1.50	1.25	1.13	1.50	1.75
Successful-Unsuccessful	—	2.13	2.50	2.75	2.25	2.50	2.37
Mean Total Score	9.5	13.3	13.5	13.5	9.6	18.25	13.9
Standard Deviation	4.03	4.9	4.04	3.43	2.95	7.96	4.83

Appendix A Table 4

Experiment II

Mean Evaluative Scale Scores, and Mean Total Scores and Standard Deviations for the Control Group on the Pretest and Second Post-test

(n = 7)

Scale	Pretest Topic						
	Ed Psy	Ind Diff	Lrnr Per	Lrnr Att	Emo Gro	Lrng Theo	Tch Att
Good-Bad	2.14	1.29	2.57	2.43	1.0	2.57	2.57
Important-Unimportant	2.43	0.43	1.57	0.71	1.86	2.29	1.86
Attracting-Repelling	3.43	2.43	2.14	2.29	2.57	3.57	2.57
Positive-Negative	3.00	1.57	3.29	2.14	1.86	3.00	2.14
Reptuable-Disreputable	1.57	1.71	2.57	2.29	2.14	2.00	1.86
Interesting-Boring	3.00	1.86	3.14	2.29	1.43	2.00	2.29
Successful-Unsuccessful	—	2.43	2.86	3.14	2.43	3.14	3.00
Mean Total Score	5.71	11.7	18.1	15.3	13.3	18.4	16.3
Standard Deviation	6.04	5.11	7.79	1.82	8.15	4.93	3.56

Second Post-test

Scale	Topic						
	Ed Psy	Ind Diff	Lrnr Per	Lrnr Att	Emo Gro	Lrng Theo	Tch Att
Good-Bad	2.43	1.57	1.71	2.14	2.14	3.14	2.14
Important-Unimportant	2.57	.57	2.43	.86	1.29	1.86	1.14
Attracting-Repelling	2.57	1.86	2.43	2.43	2.57	3.57	2.71
Positive-Negative	3.57	1.86	2.29	2.43	2.00	3.14	1.86
Reputable-Disreputable	1.57	2.14	2.29	1.57	2.43	2.57	1.57
Interesting-Boring	2.57	1.29	2.43	2.00	1.71	3.14	2.43
Successful-Unsuccessful	___	3.00	2.86	3.14	2.43	3.14	2.57
Mean Total Score	15.28	12.3	16.4	14.6	14.3	20.6	14.0
Standard Deviation	4.41	4.41	5.20	4.68	2.87	4.7	2.78

Appendix B

Sample Pages of Semantic Differential Attitude Scale

Semantic Differential Attitude Scale

This is a trial instrument for a project designed to test the change of attitudes on the part of college students in teacher training as a result of the unique experiences they will experience as part of their training program.

Instructions

Work rapidly. Read the topic at the top of each page. Indicate your description of the topic by checking the blank that best describes your position between the adjectives on each line.

EXAMPLE: TOPIC: Brushing teeth

Interesting	___	___	___	___	___	___	___	Boring
	4	3	2	1	2	3	4	
Active	___	___	___	___	___	___	___	Passive

1. Check this blank if you have no position, the adjectives do not apply, or you are neutral.
2. Check this blank if you tend in the direction of description but only weakly so.
3. Check this blank if your feelings are stronger in direction.
4. Check this blank if your feelings are very strong.

If you find you tend to think of a topic in a certain way, please comment at the bottom of the page.

Sample Page for Experiment I

EDUCATIONAL PSYCHOLOGY

Bad	___	___	___	___	___	___	___	Good
Positive	___	___	___	___	___	___	___	Negative
Important	___	___	___	___	___	___	___	Unimportant
Repelling	___	___	___	___	___	___	___	Attracting
Impractical	___	___	___	___	___	___	___	Practical
Diffuse	___	___	___	___	___	___	___	Concise
Easy	___	___	___	___	___	___	___	Difficult
Active	___	___	___	___	___	___	___	Passive
Unintentional	___	___	___	___	___	___	___	Intentional
Disreputable	___	___	___	___	___	___	___	Reputable
Boring	___	___	___	___	___	___	___	Interesting
Motivating	___	___	___	___	___	___	___	Aimless
Weak	___	___	___	___	___	___	___	Strong
Complex	___	___	___	___	___	___	___	Simple
Successful	___	___	___	___	___	___	___	Unsuccessful

The instrument consisted of seven pages of this general format with a different topic at the top of each page. The order of the adjective pairs was scrambled on each page, right to left and first to last so no two successive pages presented the same checklist. The order of the pages was different for each administration (Pretest, and each Post-test).

Sample Page for Experiment II

EDUCATIONAL PSYCHOLOGY

Bad	___	___	___	___	___	___	___	Good
Positive	___	___	___	___	___	___	___	Negative
Important	___	___	___	___	___	___	___	Unimportant
R^{E}pelling	___	___	___	___	___	___	___	Attracting
Diffuse	___	___	___	___	___	___	___	Concise
Active	___	___	___	___	___	___	___	Passive
Unintentional	___	___	___	___	___	___	___	Intentional
Disreputable	___	___	___	___	___	___	___	Reputable
Boring	___	___	___	___	___	___	___	Interesting
Weak	___	___	___	___	___	___	___	Strong

The instrument consisted of seven pages of this general format with one of the seven topics listed at the top of the page. Five of the "filler" adjective pairs used in Experiment I were eliminated to shorten administration time and scoring time. The order and right to left positions of the adjective pairs were scrambled into three formats. A topic was placed at the top of one of the formats. The order of the seven pages was randomly assigned.

Appendix C

Sample Forms of the Educational Psychology Attitude Scale (Thurstone type)

EDUCATIONAL PSYCHOLOGY ATTITUDE SCALE

This institution is involved in research. One aspect of the overall program concerns students' reactions to simulation training and his subsequent attitudes as a result of training experiences.

Although you have been asked to identify yourself on the answer sheet, please be assured that your replies will have no bearing at all upon your grades and your course work. The completed questionnaires will be analyzed by the staff of the Teaching Research Division. All replies will be treated with complete confidence.

Fill in the information called for at the top of the answer sheet now.

INSTRUCTIONS

The questionnaire consists of 30 statements of attitude toward Educational Psychology. Read each statement and decide whether or not you agree with it.

A. If the statement represents your own attitude, blacken the space between the dotted lines labeled A (agree) on the special answer sheet.

B. If you disagree with the statement, blacken the D (disagree) column on the special answer sheet.

Please limit yourself to <u>agreeing</u> with <u>5 or less</u> statements which represent your own attitude. If in doubt, agree with only those statements that <u>most</u> represent your attitude. Do not omit any of the items.

Form AS

Educational Psychology

Read all statements then agree only with five or less. Circle A for agree; D for disagree. Mark all statements.

A D 1. There is not much point in taking educational psychology if you don't like it.

A D 2. Educational psychology does not waste my time.

A D 3. Educational psychology is more valuable than any course I am taking this semester.

A D 4. Educational psychology is a waste of time.

A D 5. Educational psychology should be avoided.

A D 6. I would recommend educational psychology to my friends.

A D 7. Educational psychology gives me experience I couldn't get from a book.

A D 8. Educational psychology does not tie in with the work I intend to do.

A D 9. Educational psychology has a reputation of being valuable.

A D 10. Educational psychology is more enjoyable than any other course I am taking this semester.

A D 11. Educational psychology does not inspire students.

A D 12. Educational psychology is too hard for me.

A D 13. I don't mind educational psychology when I can see where it will help me.

A D 14. I do not feel strongly one way or the other about taking educational psychology.

A D 15. Anyone who says he likes educational psychology is feeding you a big line.

A D 16. Educational psychology is too easy for me.

A D 17. Much of educational psychology is just "dead wood."

A D 18. I am glad I am taking educational psychology.

A D 19. It makes little difference to me whether or not I take educational psychology.

A D 20. I think educational psychology is okay.

A D 21. Educational psychology broadens my outlook.

A D 22. Educational psychology is more stimulating than most of the course work I have taken or will take.

A D 23. If I have a chance in the future, I would avoid having anything to do with educational psychology.

A D 24. I have no interest in educational psychology.

Copyright 1965 Teaching Research Division

Form S3

Educational Psychology

Read all statements below. Agree only with five or less. Circle A for agree; D for disagree.

A D 1. Educational psychology covers very little of the materials presented in other education courses.

A D 2. There is a great deal of worth in educational psychology even if you don't like it.

A D 3. Educational psychology deals with material about which I want to learn.

A D 4. Educational psychology distracts me from the problems of student teaching.

A D 5. Educational psychology will help me improve my actual teaching in the classroom.

A D 6. Educational psychology will help me realize my professional or vocational goal.

A D 7. I recommend as many students as possible should avoid taking educational psychology.

A D 8. Educational psychology is concerned with practical, down-to-earth matters

A D 9. Educational psychology is all right for some students.

A D 10. Educational psychology is uninteresting.

A D 11. Educational psychology deals with detailed material.

A D 12. Even educational psychology can be fun.

A D 13. Educational psychology is a great inspiration to me.

A D 14. I am taking educational psychology mainly because I was told to do so.

A D 15. I have heard that educational psychology is not intellectually stimulating.

A D 16. Educational psychology makes teaching interesting.

A D 17. I think I will forget less about things I learned in educational psychology.

A D 18. Educational psychology is dull.

A D 19. It is hard to adjust to educational psychology.

A D 20. Educational psychology helps develop confidence.

A D 21. Educational psychology deals with concepts and principles rather than facts.

A D 22. Educational psychology does not teach anything.

A D 23. I do not recommend educational psychology to anyone.

A D. 24. I have never known anyone who likes educational psychology.

Copyright 1965 Teaching Research Division